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RESPONSE

Rather than unifying invasion biology, Dick et al.'s approach rests on subjective foundations

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In their response, Dick et al. (2017a) continue to ignore well-established mechanistic and practical limitations of the comparative functional response (CFR) framework (Vonesh et al. 2017) on the basis that "it has clearly and repeatedly succeeded". However, Dick et al. (2017a, b) fail to recognize how bias and lack of objectivity can result in overstating the magnitude of their initial claim: unification of invasion biology.

Dick et al. (2017c) point to a new meta-analysis of "known damaging invaders" as evidence for the universality of the CFR approach. This review reports that in 39 of 47 cases the functional response (FR) of known invaders were higher than natives. On the surface this appears compelling, but further examination suggests caution. In 17% of cases the invasive consumer had a lower (not higher) FR and still invaded successfully. Moreover, they fail to consider error associated with overestimating invasion: i.e., when introduced consumers had higher FRs but failed to invade. After incorporating error associated with both under- and over-estimating invasion, the CFR is likely little better than flipping a coin. Further, since the consumer pairs examined in their study were from known invasions, they represent a biased sample, so their study is likely a best case scenario. The effectiveness of CFR is even further obfuscated for communities with multiple native counterparts and several resources available. Do we predict invasion if the invader has the highest FR against all of them? Or is it enough to have a higher FR than some (one) of them?

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We salute Dick et al. for attempting to unify invasion biology but maintain that their proposal has neither firm theoretical foundations (Vonesh et al. 2017), nor enough empirical support to be accepted as a unifying rule. The field is not unified yet, but this does not mean that it cannot be.

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